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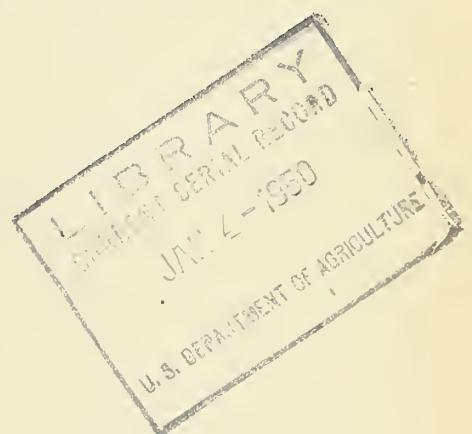
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A new process that preserves the natural fruit flavor in frozen orange and lemon purees is a big advance in the growing market for processed citrus. Mr. McGinty is in the Information Division, Bureau of Agricultural and Industrial Chemistry.

UTAH PRODUCERS BENEFITED BY RMA MARKETING SERVICES

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Utah producers of peaches, potatoes and apples have been aided directly by a marketing program resulting in more efficient methods and better quality produce for consumers. Mr. Foster is in charge of the USDA division servicing State departments of agriculture and bureaus of markets under the Research and Marketing Act.

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In the May 1949 issue of MARKETING ACTIVITIES, Mr. Bagwell discussed the manner in which supplies of wheat may be adjusted by acreage allotments in the absence of marketing quotas. In this article he describes the way supplies of wheat may be adjusted through acreage allotments in conjunction with marketing quotas.

Wheat Marketing Quotas And Their Legal Aspects

By John C. Bagwell

When farmers market more wheat than this country and foreign countries can readily absorb, two things happen: (1) Supplies pile up with a resultant strain on storage facilities, and (2) there is a heavy downward pressure on prices, which means that price support operations must be broadened and intensified. The obvious solution to the problem of too-heavy marketings is to reduce the volume of marketings so as to bring them into line with reasonable domestic and export requirements.

What are reasonable domestic and export requirements? The Agricultural Adjustment Act of 1938, as amended, (the AAAAct) says, in effect, that they are "equal a normal year's domestic consumption and exports plus 30 percent thereof, less the estimated carry-over as of the beginning of the marketing year . . ." This amount is known, technically, as the national wheat marketing quota.

Terms Are Defined

In this definition of the national wheat marketing quota, a "normal year's domestic consumption and exports" means the yearly average quantity of wheat consumed in the United States during the preceding 10 marketing years and the average quantity of wheat exported during such years, adjusted for trends in such consumption and exports. "Marketing year" means, in the case of wheat, a 12-month period extending from July 1 of one year through June 30 of the following year. "Carry-over" means the quantity of wheat on hand at the beginning of the marketing year, not including any wheat which was produced during the calendar year then current, and not including any wheat held by the Federal Crop Insurance Corporation.

The first step in putting a national marketing quota into effect is the issuance of a "proclamation" of the quota by the Secretary of Agriculture. Whenever it appears that the total supply of wheat (the carry-over of wheat in the beginning of the marketing year plus the estimated production of the commodity in the United States during the calendar year in which such marketing year begins) will exceed a normal year's

domestic consumption and exports by more than 35 percent, the Secretary is required to proclaim a national marketing quota not later than May 15 prior to the beginning of the marketing year for which such quota is proclaimed.

Effective January 1, 1950, the Agricultural Act of 1948 requires that this proclamation be issued between January 1 and July 1 of the marketing year which begins in the next calendar year. If a national marketing quota is to be proclaimed for the marketing year beginning July 1, 1951, such quota will have to be proclaimed between January 1 and July 1, 1950. This change in the law will also require a proclamation before January 1, 1950, if a national marketing quota is to be proclaimed for the marketing year beginning July 1, 1950.

Requires Two-thirds Approval by Farmers

The next step is the referendum to determine whether the farmers favor or oppose a national marketing quota for wheat. The AAA Act provides that the referendum shall be held between the date of the issuance of the proclamation of a national marketing quota and June 10 preceding the marketing year for which the quota is proclaimed. Approval by two-thirds of the farmers voting in the referendum is required to put marketing quotas into operation.

Effective January 1, 1950, the Agricultural Act of 1948 advances the date for holding the referendum from June 10 to July 25 of the same marketing year. In view of this change, any referendum with respect to a national marketing quota for the marketing year beginning July 1, 1950, would have to be held before January 1, 1950, the date on which the change in the law is effective.

Proclamation Date Advanced

Thus, the effect of the amendments made by the Agricultural Act of 1948 was to advance the final date for proclaiming a national marketing quota for the marketing year beginning July 1, 1950, from May 15, 1950, to December 31, 1949, and to advance the final date for holding the referendum from June 10, 1950, to December 31, 1949. The proclamation of a national marketing quota for a marketing year beginning July 1, 1951, and thereafter will have to be made not later than July 1 of the calendar year preceding the calendar year in which such marketing year begins, and the referendum must be held not later than July 25 of the calendar year in which the national marketing quota is proclaimed.

Approval or disapproval of the national wheat marketing quota by producers would have a bearing on the level of price support during the marketing year beginning July 1, 1950. Title II of the Agricultural Act of 1948 provides that if the quota is disapproved by more than one-third of the wheat producers voting in the referendum, the price support level will be only 50 percent of parity. But if the quota is approved, the applicable support level--which will range from 60 to 90 percent of parity, depending upon supply--will be increased 20 percent as long as the level does not exceed 90 percent of parity.

Circumstances sometimes make changes desirable.

The AAAAct, for example, makes it possible for the Secretary of Agriculture to increase or terminate quotas, when necessary, to (1) make available free of marketing restrictions a normal supply of wheat, (2) meet a national emergency, or (3) meet an increase in export demand.

In addition, if the total supply proclaimed by the Secretary within 45 days after the beginning of the marketing year with respect to which a quota was proclaimed is less than the total supply specified in the original proclamation, the quota must be increased accordingly. And if the July or August crop estimate of the Department shows that the total supply as of the beginning of the marketing year is less than a normal year's domestic consumption and exports plus 30 percent thereof, the Secretary is required to proclaim that fact by July 20 or August 20, as the case might be, and thereupon quotas become ineffective.

Between July 1 and July 15, 1949, the Secretary of Agriculture is required by the AAAAct to proclaim a national wheat acreage allotment if marketing quotas are to be proclaimed for the marketing year beginning July 1, 1950. The national acreage allotment for any crop of wheat is that acreage which will, on the basis of the national average yield of wheat, produce an amount adequate, together with the estimated carry-over at the beginning of the marketing year for such crop and imports, to make available a supply equal to a normal year's domestic consumption and exports plus 30 percent of such consumption and exports. The national acreage allotment, however, may not be less than 55 million acres.

Acreage Allotments Based on Several Factors

The Secretary apportions the national acreage allotment among States on the basis of the acreage seeded for production of wheat during the preceding 10 calendar years, with adjustments for abnormal weather and trends in acreage during such period. He apportions the State acreage allotment among counties in the State on the basis of the acreage seeded for production of wheat during the preceding 10 calendar years, with adjustments for abnormal weather and trends in acreage during such period and for the promotion of soil-conservation practices. And he apportions the county acreage allotment among farms in the county on the basis of tillable acres, crop-rotation practices, type of soil, and topography. Not more than 3 percent of the county allotment may be apportioned to farms on which wheat has not been planted during any of the three marketing years preceding the marketing year in which the allotment is made, except that any farm which received an allotment in 1942 may retain its status as an "old" farm if certain designated war crops were produced thereon during the war emergency years 1945, 1946, and 1947.

The marketing quota for an individual farm on which the acreage seeded is not in excess of the farm acreage allotment is the actual production of wheat on the farm. If the farm acreage allotment is exceeded, the "farm marketing excess" must be determined. The farm marketing excess is the normal production or the actual production, whichever is smaller, on the acreage in excess of the farm acreage allotment; but such farm marketing excess may not be larger than the amount by which

the actual production on the farm exceeds the normal production of the farm acreage allotment if the producer establishes such production to the satisfaction of the Secretary.

The farm marketing excess is important because, when marketing quotas are in effect, the producer is subject to a penalty on the farm marketing excess equal to 50 percent of the basic loan rate on the commodity applicable to cooperators (those who comply with their individual farm acreage allotments.) The penalty may be postponed or avoided by storing the farm marketing excess in accordance with regulations issued by the Secretary of Agriculture or by delivering such excess to the Secretary for disposal. Until the farm marketing excess is stored, delivered to the Secretary, or the penalty paid, the entire crop of wheat is subject to a lien in favor of the United States for the payment of the penalty, and each bushel of wheat marketed by the producer to any person within the United States is subject to the penalty payable by the buyer who may deduct the penalty from the purchase price. The commodity is regarded as "marketed" even though it is used on the farm. If the wheat is stored, the penalty must be paid by the producer at the time and to the extent of any depletion of the stored wheat, except depletion resulting from causes beyond the producer's control.

If the acreage planted to wheat on the farm is less than the farm acreage allotment, the amount of wheat from any previous crop required to be stored in order to avoid or postpone payment of the penalty is required to be reduced by an amount equal to the normal production of the number of acres by which the acreage allotment exceeds the planted acreage. The stored amount is also required to be reduced to the extent that the actual production on the farm is less than the normal production of the farm acreage allotment.

"Nonallotment" Farms Exempted

A wheat marketing quota is not applicable to any farm on which the normal production of the acreage planted to wheat is less than 200 bushels or on which the acreage planted to wheat does not exceed 15 acres. And the marketing penalty is not applicable to wheat produced on any farm classified as a "nonallotment" farm if the acreage harvested thereon is not in excess of 15 acres or the acreage allotment for the farm, whichever is larger.

In addition to penalties on his farm marketing excess, the producer who plants more than the acreage allotted to his farm runs the risk of forfeiting the benefits of price support. The Agricultural Act of 1948, as it relates to price support after January 1, 1950, states that "compliance by the producer with acreage allotments, production goals, and marketing practices prescribed by the Secretary may be required as a condition of eligibility for price support."

The Agricultural Act of 1948 made other changes in the marketing quota provisions of the AAA Act. These changes relate primarily to certain definitions of terms and to conditions under which quotas may be proclaimed. Since these changes are not effective until January 1, 1950, they will not affect any proclamation made for the marketing year beginning July 1, 1950.

Federal Beef Grades Help You Shop

By Catherine A. Nawn

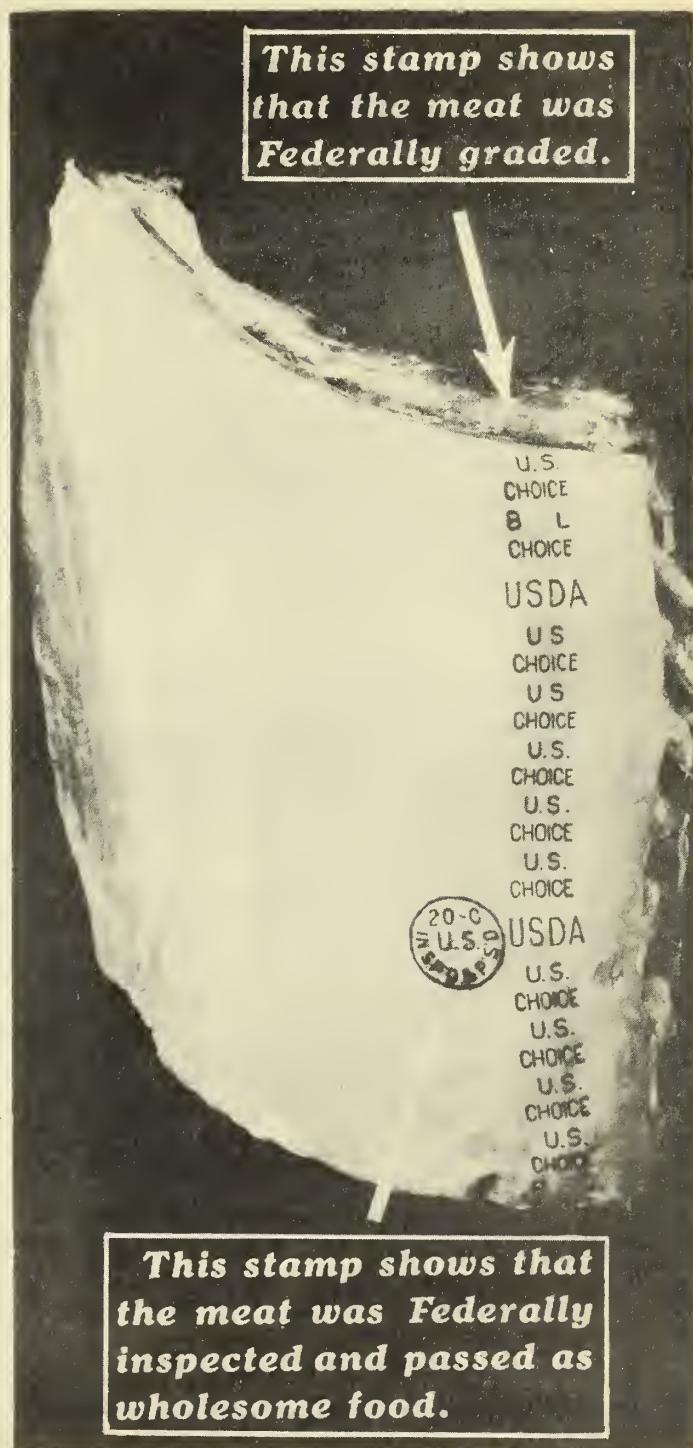
Consumers who want to get their money's worth when they buy beef should become familiar with the Federal beef grades. Federally graded beef is easily recognized by the purple grade stamp it carries.

This purple grade stamp vouches for the fact that the beef has been judged for quality by competent official meat graders. On a carcass of beef the grade name is in the form of a ribbon-like stamp clearly printed continuously across the major cuts so that it appears on every retail cut. The purple stamping fluid used to stamp the grade on the meat is a pure vegetable compound which generally disappears in the cooking process.

Also purple, but not to be confused with the grade identification, is the round stamp used in Federal meat inspection. The round purple stamp shows that the beef has been inspected and passed as wholesome food.

Factors Considered

In determining the grade of beef carcasses, the Federal grader takes into consideration three principal factors, namely: Conformation, finish, and



quality. Conformation is the general shape or contour of the carcass or wholesale cut; finish is the degree of fatness on the outside and interior of the carcass and the quantity of fat that lies between the muscling; and quality is determined by the texture, color, firmness of flesh, evidence of tenderness, and the degree of marbling which is the intermingling of the fat throughout the lean. The grader also considers other factors in his evaluation of meat. The consumer, however, needs to know only the proper interpretation of the Federal grade as assigned to the beef.

Different Grades Suit Different Cooking Needs

The U. S. official grades of beef that are usually available to consumers are Choice, Good, and Commercial. In order that consumers may know, by merely looking at the grade stamp, the quality of the meat they are getting, brief descriptions of these grades of beef are as follows:

CHOICE - Beef graded Choice is the highest quality usually available in retail shops. It has all the characteristics that produce high palatability and a thoroughly satisfactory eating quality in meat. The lean is smooth and velvety and ranges in color from a pale to a deep red, the finish or the fat covering is abundant, firm and flakey, the bones are red and porous indicating youth in the animal, and the "marbling" is quite extensive.

Rib cuts of the Choice grade are noted for their flavor, savoriness, and tenderness and they are most desirable as oven roasts. Beef of this grade may be cooked to varying degrees of doneness. But many consumers feel that a rib roast of the Choice grade is the finest when cooked to the rare or medium rare stage with a nicely browned exterior, and a cut slice that is rosy red with an abundance of red juice. Also rib and loin steaks of this grade will assure great satisfaction for they are consistently tender, juicy, and very rich in flavor. Other cuts of this grade from the chuck, as well as the round, when properly prepared, will have a well-developed flavor and will be juicy and tender.

GOOD - The characteristics that qualify beef for the Good grade are much the same as those of the Choice grade except they occur to a lesser degree. The Good grade is most popular with consumers because the cuts generally are leaner. Housewives will usually have greater opportunity to buy Good grade at the retail market, for it makes up the largest percentage of federally graded beef.

COMMERCIAL - Another popular grade of beef is Commercial. Beef eligible for the Commercial grade may be the product of young animals that do not have enough finish to qualify for the Good grade, or it may be produced from more mature animals. There may be a wide difference in the appearance of identical cuts of this grade, but consumers, may choose their cuts according to their preferences by relying on the Federal grade stamp as their index to quality.

Steaks and roasts from this grade may not prove to be as tender nor as flavorful as those from the other two grades, but normally if the beef

is cooked with moist heat at low temperature for a longer period of time than meat of the higher grades, it will be quite acceptable. Commercial grade beef furnishes a large amount of lean meat at an economical price.

Federal Graders Aid Large-Scale Purchasing

Federal meat graders are providing a valuable service to buyers of meat other than individual consumers. Officials and other purchasing agents for steamship lines, railroads, hotels, and Federal, State, city and county institutions find in the meat-grading service a direct aid in buying meats that suit their particular needs. Definite specifications based on the official standards may be prepared, and under this procedure purchases are made on the basis of competitive bids or contracts that require the meats to be graded and identified by Federal graders as conforming to the purchasers' specifications. The many purchasing agents for public and private institutions who are using the service report that it results in economy and convenience.

Grading Service Summarized

An understanding of the Federal meat grades is a great help to the individual consumer as well as to the large-order purchaser, and for both the grade stamps take away much of the uncertainty of buying.

To make meat buying simpler, it should be kept in mind that:

- (1) The three grades of beef identified by Federal grade usually available to consumers are Choice, Good, and Commercial. It is important to the homemaker to remember that meat of all grades is excellent for some specific purpose, if it is prepared properly.
- (2) The round purple stamp shows that the meat has been inspected and passed as wholesome food. The purple ribbon stamp running the length of the carcass and appearing on all principal retail cuts specifies the quality.
- (3) Retail markets can readily obtain federally graded meats if consumers insist on such meats in their purchasing.

In addition to beef, other meats such as calf, veal, lamb, and mutton are also graded by the Federal service. In general, the three grades of these meats available to consumers are the same as the grades outlined for beef.

Letter Designations Are Not Federal Grades

Frequently confusion arises between official grade designations such as Choice and Good, and letter designations. There have been instances in which beef has been labeled Grade A or AA and the implication has been that it was federally graded. This is more than misleading--it is incorrect, for letter designations have never been used in Federal meat grading. The three U. S. official grades of beef generally found

in retail stores are Choice, Good and Commercial. These grades provide consumers with a wide range of quality in meats which have many different uses.

The consumer who wants to become an efficient buyer should keep in mind the benefits of the Federal grading service. By consistently selecting meat according to official grades, as indicated by the purple stamp, the homemaker will be assured of getting the quality she wants.

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PMA CORN RESEALING PROGRAM OFFERS OPTIONS TO PRODUCERS

A corn resealing program under which producers can, not later than October 31, 1949, (1) extend their loans on 1948-crop corn to mature July 31, 1950, and (2) put purchase agreement corn under loan to mature July 31, 1950, in areas where both purchase agreements and loans are available was announced May 31 by the Production and Marketing Administration, U. S. Department of Agriculture.

Farmers who extend their loans or put the purchase agreement corn under loan will be entitled to a storage payment of 10 cents a bushel if the corn is delivered to the Commodity Credit Corporation at maturity of the loans.

The program is designed to slow down the excessive movement of corn off the farms that would result from heavy deliveries of loan and purchase agreement corn to the CCC this fall. Through March 1949, approximately 243 million bushels of 1948-crop corn had been put under loan and 52 million bushels under purchase agreements. Farmers in most areas have until June 30, 1949 to put corn under loan or purchase agreement, and by that time the total may be close to 500 million bushels.

Producers Have Three Options

Under the original program, loans on 1948-crop corn became due on September 1, 1949. The May announcement gives farmers the option of paying off loans at that time and redeeming the corn, delivering the corn to CCC, or, not later than October 31, 1949, extending the loans to mature July 31, 1950.

The original program also provides for purchase agreements under which the CCC agrees to buy, during the 30-day period immediately following the maturity date of the 1948 loans, any quantity of corn up to the maximum covered by the agreement at applicable loan delivery rates. The May 31 announcement gives producers in areas where loans are available the option of selling purchase agreement corn to CCC, of keeping it, or putting it under loan by October 31, 1949, at the 1948 loan rates, so as to mature July 31, 1950. In areas where only purchase agreements and no loans are available, the sales or retention period is the same as that in the original program.

Alcohol From Farm Products Betters Gasoline Performance

By E. O. Umsted

On two recent trips of nearly 1,000 miles each, a USDA test truck ran successfully on relatively inexpensive low-octane gasoline fortified by periodic injections of alcohol and water. Results of these tests indicate that use of alcohol in motor vehicles is potentially a vast new market for surplus grains.

The USDA researchers report that on the first trial the truck operated as well on 58-octane gasoline plus alcohol-water injection as it would have on regular gasoline, which has an octane rating of 74 or better. The alcohol-water mixture (85 percent alcohol, 15 percent water) was injected automatically into the truck carburetor when the engine was under heavy load, as when it was climbing hills, accelerating in traffic, or passing other vehicles. The engine gave knock-free performance even with the low-octane gasoline.

For the second trial run, the engine of the truck was equipped with a high-compression head (8.25-to-1 compression ratio). This made it necessary to supply the engine with fuel having an effective octane rating of at least 85. On this trip, 74-octane gasoline plus alcohol-water injection was used satisfactorily.

Outlet for Farm Surpluses and Wastes

Because of the tremendous consumption of motor fuels--more than 80 million gallons a day--general adoption of alcohol-water injection could open up a wide new outlet for surplus grains and other agricultural commodities. Alcohol can be made from a variety of these products. The usual method is by fermentation of wheat, corn, and other crops. USDA scientists in charge of the injection experiments are working to lower the cost of alcohol and also to increase the value of feed byproducts produced by this process. They are also developing methods for converting corncobs and other farm residues to alcohol.

The researchers point out the potential importance of alcohol-water injection in extending the country's supplies of petroleum. Alcohol is equivalent to 100-octane fuel, and it can be used to increase the effective octane rating--or anti-knock quality--of gasoline. Its use makes possible a wider utilization of low-octane fuels, which are cheaper and can be produced from petroleum in greater quantity than high-octane gasoline.

The road tests were conducted by USDA's Bureau of Agricultural and

The truck used in the tests was a standard model fitted with a small tank under the hood to hold the alcohol-water mixture. A simple device injects the mixture, as needed, automatically into the carburetor. Injection is controlled by engine-manifold vacuum, which accurately reflects the engine load.

Fuel consumption for the first 938-mile trip was 106.7 gallons of 58-octane gasoline, plus 8.85 gallons of the alcohol-water mixture. The truck averaged 8.8 miles to the gallon of gasoline--about normal for this type of vehicle, which weighed 10,300 pounds when loaded for the trip. As these figures indicate, 1 gallon of the mixture was used for every 106 miles of driving. The experimenters report that the mixture was being injected about 20 percent of the time the truck was on the road, and that during this time the mixture amounted to about 30 percent of the fuel consumed. Because the alcohol served both as fuel and to increase the anti-knock quality of the gasoline, there was a saving in gasoline consumption estimated at about 6 percent.

Crude Petroleum Saved

But the real fuel saving is shown by the fact that every gallon of alcohol and water used permitted the engine to burn 12 gallons of low-grade gasoline (58 octane) in place of 12 or more gallons of ordinary gasoline (74 octane). In producing gasoline from petroleum, the yield decreases about 1 percent for every increase of 1 octane number in the refined gasoline. On this basis, use of 58-octane fuel rather than fuel rated at 74 octane represents a saving of about 16 percent in terms of crude petroleum.

On the second trip, with a high-compression head on the engine, it was found that each gallon of the mixture allowed the use of 21 gallons of 74-octane fuel in place of the 23 gallons of 85-octane fuel that would have been required if the mixture had not been used.

During at least 80 percent of normal driving--when a car is running on the level and up to about 40 miles per hour--the engine will operate satisfactorily on gasoline of 50 octane number or even lower. Since ordinary gasoline is 74 octane or better, much of its anti-knock quality is in effect wasted. But when the engine is working hard, a relatively high-octane fuel is required. Alcohol-water injection can provide the necessary anti-knock quality when needed. It will increase the effective octane number of gasolines by as much as 20 octane units in many instances. In other words, alcohol-water injection can be used in present-day cars with straight-run or low-octane gasoline to give the performance of regular or premium-grade gasoline, and it can be used with regular gasoline to give super-premium gasoline performance. This is particularly important in view of the current trend toward high-compression engines, which require super-octane fuels. With alcohol-water injection, the octane requirements of these engines can be satisfied with the ordinary automobile gasolines available today.

The Evolution of Cottonseed Grading

By Marion E. Whitten

Cottonseed, once a nuisance to ginners, has become one of the major cash crops of the South and Southwest. Playing a substantial role in the healthy growth of this relatively new industry has been the development of a sound cottonseed grading system. But the evolutionary process that both the industry and the grading system have undergone to date is by no means completed.

Cottonseed crushing got off to a slow start shortly before the Civil War, and as late as 1875 only 5 percent of the estimated production of cottonseed was being crushed for oil. No refining process had been developed at that time and outlets for the inedible product were limited, the oil being used principally for soap and to a lesser extent as a fuel for miners' lamps. Because the demand was small, prices of cottonseed were low--so low, in fact, that cotton producers generally abandoned at the gins all but the seed required for next year's plantings. There the seed would accumulate until ginners were forced by law to dispose of it.

Commercial Utilization Expanded

The situation had changed markedly about the turn of the century. Processes had been developed for bleaching and deodorizing raw cottonseed oil, and substantial quantities of the refined product had appeared on grocers' shelves in the form of cooking oil, shortening, and oleomargarine. At the same time, chemists were beginning to discover many additional non-food uses for cottonseed oil. The increased demand had caused prices to advance sharply and mills had begun to examine more critically the quality of their raw material.

The mills had good reason to worry about the quality of their raw material. In 1899 it was a common practice of ginners to use their seed piles as general refuse dumps. This mixture of tin cans, papers, cinders, and seed they shipped to crushers under the general designation of "cottonseed." That year, largely because of such practices, the Interstate Cottonseed Crushers Association--an organization established to expand and improve the cottonseed oil industry--adopted two rules to govern the purchase of cottonseed. These were:

Section 1. Prime cottonseed shall be clean, dry, and free from dirt, trash, and hulls.

Section 2. Cottonseed not coming up to the requirements of prime seed shall be considered off seed. Off seed or damaged seed shall be settled for on its merits and comparative value as against standard prime seed.

Adoption of these rules brought some improvement. But by 1910, with more than 70 percent of United States cottonseed production being processed, cottonseed oil mills found that the rules adopted in 1899 were still inadequate. So the mills appealed to the U. S. Department of Agriculture for assistance in the establishment of values for "off seed" and requested that the Department, in some way, prevent the inclusion of foreign matter in seed delivered to oil mills.

As a result of conferences with the Bureau of Markets and Rural Organization, a method of judging and measuring deterioration was proposed. This was known as the "cut and count" method, which was handled as follows: A sample of 100 seed was taken at random and cut open. Each kernel that was discolored was laid aside and the total counted as a percentage of deterioration. Rates of discount were established from time to time. An additional rule was provided for reducing the weight of a shipment by the weight of foreign matter in excess of 1 percent.

Grades Revised in '20's

This rule, however, opened a channel of unfair competition, for, in order to curry the favor of a large seller, a mill would overlook the presence of foreign matter and ginners found it more economical to ship trash with the seed than to sort out the trash and ship the seed separately. In other respects, too, the "cut and count" method of discounting cottonseed was unsatisfactory. The industry recognized that the basis of discounting was inaccurate and misleading and that samples drawn and portions used for analysis were not representative. Accordingly, the Interstate Cottonseed Crushers Association in 1921 began a restudy of the grading rules and appointed a committee of chemists to investigate the question of damaged seed.

But little progress in developing an official system of grading cottonseed was made until 1924, when the Cotton Marketing Division, then in the Bureau of Agricultural Economics, undertook a study of the subject. By that time the industry had become aware of the fact that, contrary to previous opinion, the price for seed should be based on other factors as well as average oil content, and that grading should be broadened to include more than an evaluation of the degrees of oil deterioration. Oil is still considered the dominant factor in the price of cottonseed, but the value of cake and meal recovered per ton of seed is a close second to that of oil and, in some instances, the value per ton has been greater than the value of the oil recovered per ton of seed.

The Cotton Marketing Division's study revealed a large number of variables in the composition of cottonseed not theretofore reported. The residual fiber content, moisture content, protein content, oil content, and kernel content were found to vary greatly. For example, the oil content of different lots of seed were found to vary by as much as 180 pounds of oil per ton of seed and the protein content by more than 200 pounds, representing variations in value of more than 40 percent. Price studies showed that the ratio of the value of a pound of oil to a pound of 41 percent protein cottonseed cake varied from 1:4 to 1:6. The most frequent ratio was one to five.

These findings indicated that a system of grading might be developed which would include a quantity index based on this ratio of oil and cake value. By using an assumed average oil and protein content as a base, a quantity index was derived. The calculations were based on an analysis of seed and represented the theoretical total pounds of oil and meal.

The next step was to take into account losses due to free fatty acids. Losses due to free fatty acids also were reduced to a simple formula using 1.8 percent of fatty acids as the average breaking point between prime oil and oil requiring discounts. (Later the factors of moisture and foreign matter were made a part of the quality index.)

Analysis of normal seed when compared with seed grown under adverse conditions indicated an unbalanced condition. It was therefore necessary to develop a correction factor for finding the index of subnormal seed since such seed would not yield in actual practice the products as expected from normal seed.

After further study, an interbureau committee was established in the Department to develop accurate methods of sampling, handling and analyzing cottonseed. This committee secured the cooperation of private chemists interested in all phases of the oil milling industry. As a result of the studies, in May 1932, the Secretary of Agriculture issued an order establishing the grades, methods of sampling, analyzing and grading cottonseed sold or offered for sale for crushing purposes in the United States. Under this system, the quality and quantity of oil and the other products of cottonseed as determined by chemical analysis are the most important factors in grading.

Standards Extended Throughout Cotton Belt

The cottonseed standards have been used on a voluntary basis by a substantial part of the cottonseed processing industry since they were promulgated. Cottonseed crushing mills in the states in the Mississippi Valley area (Arkansas, Louisiana, Mississippi, Tennessee, southeast Missouri and southern Illinois) have used the standards for purchase almost continually since they were published in 1932. In 1937, at the request of the cottonseed industry, the Cotton Division undertook the supervision of sampling and grading. The use of the standards has gradually extended throughout the Cotton Belt, until in 1947-48, approximately three-fourths of all cottonseed sold for crushing purposes were graded by the official U. S. standard methods.

Periodic research is conducted by the Cotton Branch, Production and Marketing Administration to determine if adjustments are required in the grading system to make it reflect, as accurately as possible, the actual milling value of the seed under technology currently employed in the cottonseed crushing industry. Minor corrections have been made from time to time. A comprehensive study of the relationship of the present system of grading to the actual output of products obtained at mills using the system, is now in progress. This study covers results obtained during a recent 5-year period.

Although the present system of grading cottonseed by chemical analysis has proved satisfactory as applied to large lots such as carloads of seed, it is recognized that this system is too expensive and time consuming for application to small lots as sold by most cotton producers. Studies are now being made that are designed to develop a simplified system of grading that will be feasible for small lot sales by farmers.

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SEED DRYING WITH CHEMICAL PROVES SUITABLE IN TESTS

A new approach to the problem of farm drying of seed which uses chemicals instead of the conventional heat methods has been developed by engineers of the U. S. Department of Agriculture. The method appears suitable for use by the small grower. It avoids the fire hazard which exists with heated air drying and also avoids the danger of reducing germination by overheating of the seed.

In laboratory experiments followed by farm tests lupine seed was dried with air dehydrated by passing it over calcium chloride. The chemical sells in the range of 3 cents a pound, and it took about 3 pounds to reduce the moisture content of 100 pounds of lupine seed from 17.3 to 13 percent.

The seed is dried in a tight bin with a screened bottom through which dried air is fanned. The moistened air from the top of the bin is then recirculated to the bottom of the dryer. In the dryer unit it passes first over brine from the calcium chloride, then over the flakes of the chemical and then back to the bin again.

Wholesale handlers of seed can afford more elaborate and closely regulated equipment for drying seeds with heated air. This new method is simple and safe, and with the exception of the fan can be built by any man reasonably handy with tools says the Department. It is likely to be used most in the Southeast where the humidity of unheated air is usually too great to make it practical to dry seed satisfactorily.

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FREDERICK J. HUGHES RETIRES

Frederick J. Hughes, a career employee with more than 40 years service in the Federal Government--the last 35 with the U. S. Department of Agriculture--retired on May 31. At the time of his retirement, Mr. Hughes was Chief, Administrative Services Division, Budget and Management Branch, Production and Marketing Administration. Mr. Hughes has accepted an executive position with a large hotel corporation with headquarters in New York City.

New Frozen Citrus Purees Make Fine Dessert Products

By Thomas McGinty

Frozen orange and lemon purees are now being sold to bakers and ice-cream manufacturers in many parts of the country. These products were developed in the Los Angeles, Calif., laboratory of USDA's Bureau of Agricultural and Industrial Chemistry (recently moved to a new building in Pasadena). They give natural lemon and orange flavor and extra smoothness to sherbets, ices, and pies, and offer citrus growers a promising new market for their fruit.

Work on the purees began about 2 years ago. A commercial firm soon became interested, and in 1948 it packed a million pounds of citrus puree for bakers and the ice-cream industry. Last summer one large dairy sold 750,000 pounds of sherbet made from frozen orange puree.

New Process May Utilize Navel Oranges

Particularly important to California citrus growers is the possibility that purees may be produced successfully from navel oranges. This type of fruit, which constitutes better than a third of the California orange production, previously has not been suitable for processing because of the tendency of the fruit or juice to turn bitter. Preliminary tests by the Bureau now indicate that the new pureeing process will overcome this difficulty and may permit the manufacture of a satisfactory product from navel oranges.

Large-scale production of frozen citrus purees, thus far confined to California, is virtually just beginning. The USDA experimenters anticipate that the process will soon be expanded to other citrus-producing areas, particularly in Florida.

When properly prepared and stored at low temperatures (minus 10 to zero F.), the purees keep the flavor and nutritive value of fresh oranges or lemons remarkably well for a year or more. In addition to their use in a variety of desserts, such as cakes, pies, ice creams, and sherbets, they also make flavorful jams, marmalades, and beverages.

Citrus purees, like purees from other fruits, differ from fruit juices in that they contain more of the fruit pulp. They give more body, smoothness, and superior flavor to prepared food products. Increasing quantities of other fruit purees have been produced for about 18 years. But the manufacture of frozen purees from oranges and lemons was not undertaken on a substantial commercial scale until last year. The reason for the delay was the prevailing opinion that citrus purees would

develop off-flavors in storage as a result of their high content of citrus-peel oil.

By applying special processing methods, including some adapted from methods that had previously succeeded with other fruits, the USDA scientists were able to overcome the peel-oil problem and other difficulties. A few experimental packs of orange and lemon puree were put up by the Los Angeles laboratory during the 1947 season. After a year's storage at zero F., the product prepared by the laboratory's process remained in excellent condition. No off-flavors had developed, and losses of vitamin C were negligible. Commercial production began shortly thereafter and was immediately successful.

In the procedure developed at the laboratory, sound ripe fruit is first thoroughly washed (preferably with a detergent), rinsed in cold water, and dried. The stem end of the fruit is cut off, and discolored spots are removed from the fruit so that no dark specks will appear in the brightly colored puree. After it is trimmed, the whole fruit is cut up, crushed, and then screened to produce the puree. The final product, which contains less than 1 percent of peel oil, flows into a stainless steel tank, where sugar is added (1 part sugar to 5 parts puree), and is then filled into enamel-lined cans, sealed, and frozen.

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RATE OF FREEZING VEGETABLES HAS NO EFFECT ON VITAMINS

Quick freezing or slow freezing--it makes no important difference so far as the quality and vitamin content of frozen vegetables are concerned, except in the case of asparagus whose texture as a cooked vegetable may be altered if frozen too rapidly or too slowly. For all practical purposes, however, the rate of freezing usually employed in home freezers will yield satisfactory products with respect to quality, nutritive value, and freedom from bacteria.

These conclusions, based on extensive tests carried on by food scientists at the State experiment station at Geneva, New York, have significance for both commercial and home freezing. In the New York station, peas, snap beans, spinach, corn, lima beans, and asparagus were frozen very rapidly, very slowly and at intermediate rates. In all instances, except with asparagus, no difference could be detected after thawing and after cooking between lots frozen at different speeds. Also, the vitamin content of all lots remained substantially the same for all the vegetables tested, including asparagus.

The bacterial content of peas and whole-kernel sweet corn frozen at the different speeds was also determined. At the most rapid rate of freezing, the vegetables congealed so rapidly that the bacterial content of the frozen product was essentially that of the blanched vegetables. Freezing at slower rates allowed a small amount of bacterial growth until the freezing temperature was reached, but during freezing storage there is a slow death of the bacteria in the frozen state.

Utah Producers Benefited By RMA Market Services

By Leighton G. Foster

Many Utah peach growers have profited from a Federal-State marketing service program that got under way in 1948.

In one section of the State where marketing specialists aided farmers, peach producers were able to get a premium of 50 cents a bushel for much of their crop because of uniform quality.

Last year in this area only 283 baskets of peaches were turned down by dealers for reasons of quality during the entire harvest season, compared with a daily rejection of 300 to 550 baskets in previous years.

In another section of the State where the program was in operation, growers who had decided against harvesting their peaches because of adverse market conditions were informed by marketing specialists of a sudden demand for the fruit. Acting quickly, the farmers were able to sell a good deal of their crop at the best prices since 1945, because of this specialized marketing information.

The peach marketing work is only one phase of this program in Utah. Work also is being done on potatoes and apples.

Services Financed Cooperatively

The program is being carried out by the division of marketing of Utah State Department of Agriculture. It is financed cooperatively by the State and the Production and Marketing Administration, U. S. Department of Agriculture, under the marketing service provisions of the Research and Marketing Act of 1946. Similar marketing service work is being conducted in 22 other States.

The peach work began before harvest time with a series of meetings with growers. At these sessions marketing specialists and inspectors outlined the advantages of good-quality, graded fruit. And the growers presented their problems. Nearly 450 persons attended the nine pre-harvest meetings. The Agricultural Extension Service in Utah arranged the sessions.

Shortly before the harvest began, marketing specialists went into the peach areas of the State.

Each specialist was assigned a small section of a growing area. The men went up and down country roads locating peach orchards. The specialists called on farmers to "talk peaches." They sounded out farm-

ers on their problems and plans, discussed with them the best stage of maturity at which to harvest fruit, and helped them with harvesting and grading problems. Often they worked with the growers briefly in the harvest operation, showing them the best methods of handling the fruit.

At packing sheds the specialists sometimes went to work helping with the packing even before introducing themselves as marketing experts. In this way they learned the operations in each shed and were regarded as friends before they started making suggestions for improvements.

The specialists explained to packers the reasons for shipping good quality fruit, the advantages of grading peaches and the best way to pack the fruit. Farmers were so impressed by the results of this work that they requested an expansion of the services in 1949. Cooperatives, shippers, inspectors and brokers also were pleased with the program.

Potato and Apple Problems Studied

In addition to the successful peach marketing project important work also has been done on potato and apple marketing problems in Utah.

The potato work showed that retailers and wholesalers preferred out-state potatoes, especially those from Idaho, because of the poor quality of many Utah potatoes. Most Idaho potatoes offered for sale in Utah were graded and of good quality while many Utah farmers marketed large quantities of inferior, ungraded potatoes. Efforts are being made to improve this situation.

Apple quality was observed in grocery stores and in wholesale-houses. It was found that the marketing of Utah apples was disorderly, with little or no attention paid to grading and quality. The State's apples were unable, because of the quality factor, to compete with those shipped into Utah.

As a result of these observations, Utah wholesalers and retailers agreed to set up a merchandising program for the State's apples if growers, packers and shippers agreed to market only good quality, graded apples. The Utah Agricultural Experiment Station and the State Horticultural Society of Utah helped in the apple survey.

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COTTON IMPROVEMENT PROGRAM PROVES BENEFICIAL

Louisiana cotton producers have benefited materially by the one-variety cotton improvement program, according to a statement issued cooperatively by Louisiana Extension Service, the Louisiana State University and Agricultural and Mechanical College, and USDA. All cotton in the organized parishes studied was sold on the basis of its grade and staple length, with the shift toward production of cotton of a uniformly longer staple length being considered the most important result of the program.

MARKETING BRIEFS:

Dairy.--May 18 USDA announced its decision to raise the minimum price assured to producers of Class I milk in the Dubuque, Iowa, marketing area in order to bring Dubuque prices in line with those of the nearby Quad Cities and Clinton markets. The change, which also would vary the minimum prices seasonally as is done in the other markets, must be approved by two-thirds of the producers in the Dubuque area before it can become effective. The seasonal prices announced in the Department's decision would raise the differential price for Class I milk over a year's period by an average of 17 1/2 cents per hundredweight. Prices handlers have been paying for Class I milk will not be changed since they have been paying a 30 cent per hundredweight premium on all classes of milk.... A decision to increase the differentials used in determining the minimum prices to be paid milk producers for Class I and Class II milk in the Omaha-Council Bluffs milk marketing area was announced May 27 by USDA. The differentials are added to a basic price (representing the price paid for milk going into manufactured dairy products) in computing the Class I and Class II prices under the provisions of the Federal order regulating the handling of milk in the marketing area. The proposed differentials are varied seasonally to encourage output in the seasons of lower production, and they range from 75 cents to \$1.15. Existing differentials range from 60 cents to \$1.00. Before the change can be put into effect it must be approved by two-thirds of the producers in the area.

Fats and Oils.--Recently announced results of a survey conducted for PMA by the Bureau of the Census, United States Department of Commerce, shows that soybeans processed by the solvent method of extraction from October 1, 1947 to September 30, 1948, increased materially from previous years. A total of 61 million bushels, about 38 percent of the total crush during this period, was thus processed as contrasted with about 45 million bushels, or 27 to 28 percent of the total crush, processed by that method in each of the two preceding crop years. Results of the survey showed that soybeans processed by the screw press method in October 1947-September 1948 amounted to about 88 million bushels, or 54 percent of the total crush, whereas 109 million bushels were processed by screw presses in 1946-47. A total of 13 million bushels was processed by the hydraulic press method in 1947-48 compared with 16 million a year earlier.

Fruits and Vegetables.--May 17 USDA announced a program beginning September 1, 1949, to support 1949-crop sweetpotatoes at an average of 80 percent of the July 1, 1949, parity price. Support prices for the 1948 sweetpotato crop averaged 90 percent of the July 1, 1948, parity price. Dollar-and-cent support prices for the 1949 crop will be announced as soon after July 1 as possible, and will be based on U. S. No. 1 grade washed sweetpotatoes packed in new containers and loaded in carlots or trucklots. The 1949 schedule will not include a separate price for U.S. extra No. 1 grade since sweetpotatoes making this grade generally sell in commercial markets at more than the support price. Porto Ricans and Nancy Halls will be supported at higher levels than other varieties. Golden and Jersey varieties will be supported at 20 cents per bushel less than the Porto Ricans and Nancy Halls, and other varieties at 50

cents per bushel less than the Porto Ricans and Nancy Halls. If need should develop in any area for support of U. S. No. 2 grades, support prices, terms and conditions for them will be announced at that time.

Grains.--In order to make price support available to producers of wheat harvested before the beginning of the marketing year, July 1, interim 1949-crop wheat loan and purchase agreement rates in specified counties in 11 States, and at three terminal markets handling early-harvested wheat, have been authorized by PMA. The three terminals are Kansas City, Mo., and Los Angeles, Calif., with an interim rate of \$2.16 a bushel for U. S. Grade No. 1 wheat, and Galveston, Texas, with an interim rate of \$2.26 a bushel. The 11 States are Arizona, California, Georgia, Kentucky, New Mexico, North Carolina, Oklahoma, South Carolina, Texas, Tennessee, and Virginia, with interim rates based on wheat parity prices as of April 15, 1949. Final rates for all States and terminal markets cannot be announced until July, since legislation requires that rates be established at not less than 90 percent of parity at the beginning of the marketing year. The interim rates include a deduction of 3 cents a bushel as a margin of safety against a possible change in parity prices at that time. April 15, 1949 wheat parity was \$2.17 a bushel. If wheat parity at the beginning of the marketing season is \$2.17 a bushel, the national average of loan rates for U. S. Grade No. 1 wheat would be \$1.96 a bushel, as compared with a national average of \$2.00 a bushel on the 1948 crop....A program permitting farmers to (1) renew their loans on 1948-crop farmstored wheat, oats, and barley, and (2) put purchase agreement 1948-crop wheat, oats, and barley under farm-storage loan to mature on April 30, 1950, or earlier on demand, was announced May 12 by USDA. Wheat farmers taking part in the program will receive an immediate storage payment of 7 cents a bushel for the 1948-49 storage period, and from 10 to 11 1/2 cents, depending upon the area, for the 1949-50 period on wheat delivered to the Commodity Credit Corporation at maturity of the loans. For oats and barley no storage payments will be made for the 1948-49 storage period, but payments amounting to 8 cents a bushel for oats, and 10 cents for barley, will be made for the 1949-50 storage period on oats and barley delivered to CCC at maturity of the loans. The program is designed to slow down the flow of loan and purchase agreement grain off the farms in excess of market requirements. It is also a part of the Department's overall objective of encouraging farm storage of grains for orderly marketing and effective price support.

Sugar.--USDA, the British Ministry of Food, and the Cuban Sugar Stabilization Institute jointly announced May 13 that agreement had been reached for purchases by the Commodity Credit Corporation and the British Ministry of Food of a total quantity of 750,000 long tons (approximately 850,000 short tons) of raw sugar from the Institute. Under this arrangement the British Ministry of Food will purchase 350,000 long tons and CCC will purchase 400,000 long tons, including 5 cargoes (approximately 50,000 long tons) already delivered to CCC by the Institute. The agreement provides that the first 100,000 long tons for the Ministry and 150,000 long tons for CCC will be purchased at a price of 4 cents per English or American pound, and that the price of the remaining 500,000 long tons shall be determined within the upper limit of 4 cents per pound, by the average monthly spot price for Cuban free world sugar, as reported by the New York Coffee and Sugar Exchange, for the months of July to November 1949, inclusive.

ABOUT MARKETING

The following addresses, statements, and publications, issued recently, may be obtained upon request. To order, check on this page the publications desired, detach and mail to the Production and Marketing Administration, U. S. Department of Agriculture, Washington 25, D. C.

Addresses and Statements:

United States Agriculture and Point Four, a statement by Charles F. Brannan, Secretary of Agriculture, at Washington, D. C., May 12, 1949. 4 pp. (Processed)

Better Conservation and Better Living, a talk by Charles F. Brannan, Secretary of Agriculture, at Washington, D. C., May 12, 1949. 10 pp. (Processed)

Hog Cutting Tests and Meat Prices, by A. T. Edinger at Chicago, Ill., May 24, 1949. 10 pp. (Processed)

Publications:

State Agricultural Department and Marketing Agencies With Names of Officials. (PMA) May 1949. 8 pp. (Processed)

Motion Pictures of the United States Department of Agriculture, 1949. (USDA) MP-673. 1949. 53 pp. (Printed)

United States Standards for Potatoes. Effective June 1, 1949. (PMA) April 1949. 12 pp. (Processed)

United States Standards for Grades of Frozen Strawberries. Effective May 1, 1949. (PMA) April 1949. 21 pp. (Processed)

Interstate Movement of Dairy Cattle for 11 Northeastern States, 1948. (Bureau of Agricultural Economics) April 1949. 10 pp. (Processed)

The International Wheat Agreement of 1949: A Statement of the Secretary of Agriculture. (Office of Foreign Agricultural Relations) March 1949. 23 pp. (Processed)

Summary 1949 Florida Strawberry Season. (Federal-State Market News Service) April 1949. 2 pp. (Processed)

Market News Service Summaries of Michigan Fruit and Vegetable Crops, 1948 Season (PMA-Michigan Dept. of Agri. Bureau of Foods and Standards cooperating) Individual Summaries: Marketing the Michigan Celery Crops; Grape Crop; Apple Crop; Peach Crop; and Pear Crop.

Marketing Florida Prepackaged Sweet Corn. (Florida Agricultural Experiment Station and PMA) April 1949. 27 pp. (Processed)

